

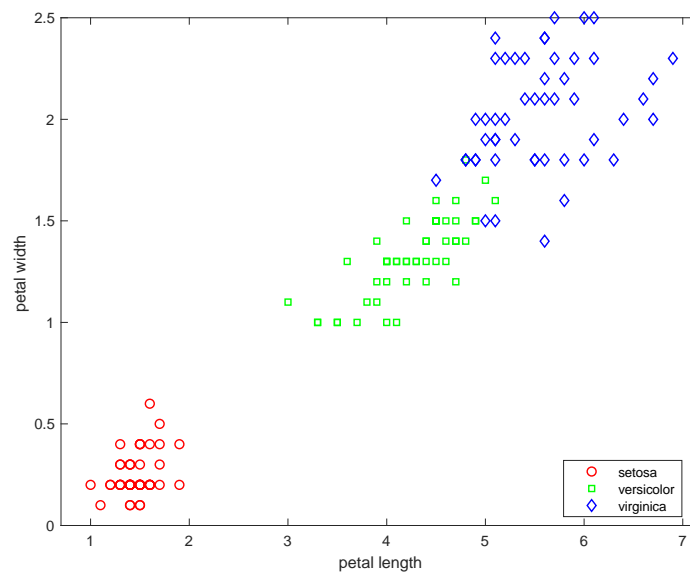
CO6062: Machine Learning Algorithms, CE/NCU, 2024

Homework 1, Due: 2024/11/5 (Tuesday)

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Problem: Compare and discuss the classification error rates among the following four methods including **LDA**, **QDA**, **K-mean**, and **agglomerative clustering** algorithms.

- (1) Use Matlab function `classify.m` to classify fisheriris data based on petal length and petal width for 150 iris specimens. Give the coefficients of the LDA and QDA classification functions and plot the functions how to classify them into 3 classes on the following fisheriris gscatter plot.



- (2) Write a MATLAB program to implement the K-means method for clustering the data points.
- (3) Write a MATLAB program to implement the agglomerative clustering algorithm to cluster the data points.

You must plot the classification results with the above four methods to show the results with different colors and symbols for different clusters that you classify.

Reference Data Generation Codes: (in your MATLAB Command Window, ref: MATLAB R2023a)

```
load fisheriris
gscatter(meas(:,3), meas(:,4), species,'rgb','osd');
xlabel('petal length');
ylabel('petal width');
```